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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/702,379 | 11/05/2003 | Earl M. Ott | 0275Y-000679 | 8360 |
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| HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303 | | | EXAMINER | NGUYEN, TRAN N |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2834 | |

DATE MAILED: 05/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|---------------|--------------|
| Office Action Summary | Applicant No. | Applicant(s) |
| | 10/702,379 | ORTT ET AL. |
| Examiner | Art Unit | |
| Tran N. Nguyen | 2834 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 05 April 2004.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-40 is/are pending in the application.
 4a) Of the above claim(s) 30-40 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-6,8-15,17-25 and 27-29 is/are rejected.
 7) Claim(s) 7,16 and 26 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 05 November 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Election/Restriction

Applicant's election of claims 1-29, filed on April 5, 04 is acknowledged. The applicant's traverse reason with respect to the restriction is carefully considered but found not persuasive. The fields of search for a method of making a device and for a structure of the device, i.e., the product, are not coextensive, and determinations of patentability for claims of a method of making a device and claims of the device's structure are different.

In the determinations of patentability for claims of a method of making a device, the fabrication process includes its sequential order of fabricating steps and/or tools used in these steps of forming the device are considered significant.

On the contrary, in the determinations of patentability for claims of the device's structure the limitations of device's elements and their structural relationships as well as their functional/operational relationships are considered significant. In other words, in the device claimed invention, or in a product-by-process feature of a device, the method of forming the device is not germane to the issue of patentability of the device itself. (*In re Thorpe*, 227 USPQ 964, 966.)

Therefore, The fields of search for a method of making a device and for a structure of the device, i.e., the product, are not coextensive and the consideration for patentabilities are different and independent. This is the reason why there are two different and separate classifications for the method of forming the lamination core and the lamination core structure.

Thus, the restriction, which is set forth in the previous Office Action, is deemed to be proper and hereby made FINAL.

Drawings

The drawings are objected to under 37 CFR 1.83(a) *because they fail to clearly show the slots (95, 96) having different widths*, as described in the specification and recited in the claims 12, 13 and 29. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction

or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. **Claims 1-29** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 14, 19-20, the term “**a material**” in the recited phrase “*a material overmolded around the plurality of magnets*” is indefinite because it does not provide any metes and bound for the limitations. In other words, with the recitation, one skilled in the art would not ably to figure out what kind of material, i.e., metallic or nonmetallic material, magnetic or nonmagnetic metal, fluid or gas or powder material, that has certain characteristics. Thus, with this recitation, one skilled in the art would not ably to figure out or determine whether there is a patentable infringement or not. *According to MPEP section 2171*, two Separate Requirements for Claims Under 35 U.S.C. 112, Second Paragraph:

- (1) the claims must set forth the subject matter that applicants regard as their invention; and
- (2) the claims must particularly point out and distinctly define the metes and bounds of the subject matter that will be protected by the patent grant. (Emphasis added).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1, 3-6, 10-11, 14-15, 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **McManus (US 5,268,607)** in view of **Brassard (US 5,861,695)**.

McManus discloses a stator assembly (figs 1-3) comprising:

a molded resin motor housing;

a flux ring (38) disposed, wherein the molding material of the molded housing overmolded around the flux ring to secure the flux ring within the housing;

a plurality of permanent magnets (PMs) (44, 46) disposed around an inner surface of the flux ring;

wherein:

the flux ring (38) includes a seam (48) to provide mounting flexibility for securely molding the flux ring to the housing (12), i.e., to allow the flux ring to be compressed for insertion into the housing during assembly. Fig. 3 shows the seam (48) is in alignment with the PM poles (44, 46), and the seam is filled with the overmold material (fig 2); therefore, the overmold material upon hardening preventing the flux ring from compressing;

the housing (12) having at least one projection (52, 54) and the flux ring includes at least one hole (50), the projection being received in the hole (fig 2) and arranged to be aligned the PM pole in the flux ring; wherein the projections (52, 54) are the keying features being formed in the overmold material between PM poles thereof.

McManus substantially discloses the claimed invention, except for the limitations of the *material overmolded around the plurality of magnets to secure the magnets to the flux ring*.

Brassard, however, teaches a stator assembly (figs 1-3) having resin molding material overmolded around the plurality of magnets to secure the magnets to the flux ring, and consequently to secure the flux ring to the housing for the purpose of facilitating and reducing manufacturing process and cost as well as well as enhance the abutment of the PMs to the yoke without any use of welding or mechanical attachment.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by providing a material overmolded around the plurality of magnets to secure the magnets to the flux ring, as taught by **Brassard**. Doing so would facilitate

and reduce manufacturing process and cost, as well as enhance the abutment of the PMs to the yoke without any use of welding or mechanical attachment.

3. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over **McManus and Brassard**, as applied in the rejection against the base claim, and further in view of **Shiga et al (US 5,475,276)**.

The combination of McManus and Brassard refs substantially discloses the claimed invention, except for the added limitations of the *flux ring including anchors extending radially inward with the plurality of permanent magnets disposed between the anchors*.

Shiga, however, teaches a PM stator having flux ring (2) including anchors (4) extending radially inward with the plurality of PMs (6) disposed between the anchors (4) for the purpose of improving the abutment of the PMs to the flux ring.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by configuring the flux ring with anchors extending radially inward with the plurality of permanent magnets disposed between the anchors, as taught by Shiga. Doing so would provide the flux ring means to improve abutment of the magnet thereto.

4. **Claims 8 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **McManus and Brassard**, as applied in the rejection against the base claim, and further in view of **Yamano (US 5,783,888)**.

The combination of McManus and Brassard refs substantially discloses the claimed invention, particularly McManus disclose the molding housing having front bearing support (22, fig 3), and Brassard teaches the overmolded around the PMs to secure the PMs to the flux ring. The combination of McManus and Brassard refs, however, does not disclose the limitations of the following: *the stator assembly further including at least one of a rear bearing support and fan baffle integrally formed of the overmold material*, as recited in claim 19 and 9.

Yamano, however, teaches a stator assembly (fig 2) that including a fan (4) with baffle (4a); front and rear bearing support (2) for supporting front bearing (2a) and rear bearing (2b) integrally formed of the overmold material, synthetic resin (27) which is generally read as plastic material. The integrally molded bearing support would provide mechanically support for the bearing and protect the stator with enhance heat radiating and cooling the device, via the fan (4).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by configuring the assembly to include a fan with baffle, a front and rear bearing support integrally formed of the overmold material, synthetic resin, as taught by Yamano. Doing so would provide means for mechanically supporting the bearings thereof, and protecting the stator, as well as means for enhancing heat radiating and cooling thereof.

5. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over **McManus and Brassard**, as applied in the rejection against the base claim, and further in view of **Tanaka (US 4,015,154)**.

The combination of McManus and Brassard refs substantially discloses the claimed invention, particularly McManus disclose the molding housing having front bearing support (22), fig 3) and an end cap (26) with bearing thereof, except for the added limitations of the following: the stator assembly further including rear bearing support integrally formed of the overmold material overmold material, the rear bearing support including a cap having a pocket therein for receiving a rear bearing.

Tanaka, however, teaches an overmolded stator assembly (figs 1, 5-6) wherein the overmolded stator structure having a cap (5) having a pocket therein for receiving a rear bearing (fig 6) for the purpose of providing mechanical support while simplifying the structure and assembling process thereof.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by configuring the assembly to include rear bearing support integrally formed of the overmold material overmold material, the rear bearing support including

a cap having a pocket therein for receiving a rear bearing. Doing so would provide means to support the bearing while simplifying the structure and assembling process thereof.

6. **Claims 1, 11 and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brennan et al (US 4,873,461)** in view of **Brassard (US 5,861,695)**.

Brennan discloses a power tool having stator assembly (figs 1-3) comprising:
a power tool housing having a motor disposed within the housing and having an output coupled to a transmission (Fig 1); wherein the motor having a stator assembly including: a stator housing comprises front and rear caps (25, 26) located between the stator cylindrical housing wall (24), each of the caps (25, 26) is configured with bearing support for mechanically support the front and rear bearings thereof (fig 2);

a plurality of PMs secured on the stator assembly acting as field magnets thereof.

Brennan substantially discloses the claimed invention, except for the limitations of *a flux ring disposed within a stator housing, a material overmolded around the plurality of magnets to secure the magnets to the flux ring and secure the flux ring to the stator housing*.

Brassard, however, teaches a stator assembly (figs 1-3) having resin molding material overmolded around the plurality of magnets (2) to secure the magnets to the flux ring (1) for the purpose of facilitating and reducing manufacturing process and cost as well as enhance the abutment of the PMs to the yoke without any use of welding or mechanical attachment. In one embodiment, Brassard's stator having two poles, each having two PMs. The two poles are separate by a keying slot therebetween.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by providing a material overmolded around the plurality of magnets to secure the magnets to the flux ring, as taught by Brassard, and consequently the flux ring to the housing. Doing so would facilitate and reduce manufacturing process and cost, as well as enhance the abutment of the PMs to the yoke without any use of welding or mechanical attachment.

7. **Claims 2 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Brennan and Brassard, as applied in the rejection against the base claim, and further in view of **Shiga et al (US 5,475,276)**.

The combination of Brennan and Brassard refs substantially discloses the claimed invention, except for the added limitations of the *flux ring including anchors extending radially inward with the plurality of permanent magnets disposed between the anchors*.

Shiga, however, teaches a PM stator having flux ring (2) including anchors (4) extending radially inward with the plurality of PMs (6) disposed between the anchors (4) for the purpose of improving the abutment of the PMs to the flux ring.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by configuring the flux ring with anchors extending radially inward with the plurality of permanent magnets disposed between the anchors, as taught by Shiga. Doing so would provide the flux ring means to improve abutment of the magnet thereto.

8. **Claims 3-5, 14 and 22-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brennan and Brassard** and further in view of **Abbratozzato et al (US 4,682,066)**.

The combination of Brennan and Brassard refs substantially discloses the claimed invention, particularly Brassard teaches the flux ring (1) having seam (11) that is filled with overmolded material; however, Brassard does not clearly teach whether the seam would be able to compressed for insertion into the housing. Thus, the combination of Brennan and Brassard refs does not disclose the added limitations of the *flux ring including*

- (a) a seam that allows the flux ring to be compressed for insertion into the housing during assembly of the stator assembly;*
- (b) the seam of the flux ring aligned with one of the magnetic poles.*

Abbratozzato, however, teaches a PM stator assembly (figs 3-7) comprising a plurality of PM poles (84) mounted on the inner surface of a flux ring (64), wherein the flux ring (64) having a seam (66) allows the flux ring to be compressed to urge the PMs for engaging insertion into the

housing surfaces (62) of end caps (38, 40) during assembly of the stator; also, the seam (66) is placed in alignment with one of the magnetic poles (84) (figs. 5, 7) for minimizing electromagnetic losses.

As mentioned before, Brassard teaches the flux ring (1) having seam (11) that is filled with overmolded material; however, Brassard does not clearly teach whether the seam would be able to compressed for insertion into the housing. However, Abbratozzato's essential teaching of a flux ring having seam to allow the flux ring to be compressed for inserting the flux ring into the housing. Thus, those skilled in the art would understand that it would have been obvious to an artisan to apply the Abbratozzato's essential teaching of flux ring with seam to modify the flux ring of the disclosed stator assembly, particularly with the Brassard's flux ring by forming a seam that allow the flux ring to compress for snugly fit to the stator housing, and consequently the seam is filled with molded material (as shown in fig 1 of Brassard ref).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by providing the flux ring with a seam that allows the flux ring to be compressed for insertion into the housing and place the seam in alignment with the stator pole, as taught by Abbratozzato. Doing so would respectively enable a snugly fit and tight abutment between the flux ring and the stator housing as well as to minimize magnetic losses thereof.

9. Claims 6, 15, 17 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brennan, Brassard and Abbratozzato**, as applied in the base claims, and further in view of **Akiwa (Pat Pub US 2002/0079769 A1)**.

The combination of Brennan, Brassard and Abbratozzato refs substantially discloses the claimed invention, except for the limitations of at least one projection and at least a hole formed in the flux ring and the housing so that the projection being received in the hole to align the flux ring in the housing, wherein the hole and the projection are disposed about ninety degrees from the seam of the flux ring.

Akiwa, however, teaches a permanent magnet assemble (FIG. 2B), wherein the yoke (4) provided with a positioning projection (22) is aligned with a positioning recess (23) provided in

the PM (5) to position the PM (5) and the rotor yoke (4). Those skilled in the art would realize that the Akiwa's important teaching is to provide a matching projection and hole for positioning the two structural components in location alignment.

Thus, by applying the Akiwa's essential teaching, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by providing either the flux ring or the housing with a projection and the other with a hole, wherein the projection being received in the hole for positioning two structural components together. Doing so would provide means to enable positioning structural components in alignment.

10. Claims 8-10, 19 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brennan, Brassard and Abbratozzato**, as applied in the base claims, and further in view of **Yamano**.

The combination of Brennan, Brassard and Abbratozzato refs substantially discloses the claimed invention, Brennan discloses a housing including front and rear bearing holders for supporting the bearings, except for the limitations of the bearing holders, and fan baffle integrally formed of overmold material.

Yamano, however, teaches a stator assembly (fig 2) that including a fan (4) with baffle (4a); front and rear bearing support (2) for supporting front bearing (2a) and rear bearing (2b) integrally formed of the overmold material, synthetic resin (27) which is generally read as plastic material. The integrally molded bearing support would provide mechanically support for the bearing and protect the stator with enhance heat radiating and cooling the device, via the fan (4).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by configuring the assembly to include a fan with baffle, a front and rear bearing support integrally formed of the overmold material, synthetic resin, as taught by Yamano. Doing so would provide means for mechanically supporting the bearings thereof, and protecting the stator, as well as means for enhancing heat radiating and cooling thereof.

11. **Claims 12-13, 18 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Brennan, Brassard and Abbratazzato**, as applied in the base claims, and further in view of **Ebner (US 4,935,655)**.

The combination of Brennan, Brassard and Abbratazzato refs discloses the claimed invention. Particularly, Brassard's stator has two magnetic poles, each has two magnets, wherein the two poles are separate by two keying slots (fig 1-3, unnumbered) therebetween. The above prior-art combination substantially discloses the claimed invention, except for the limitations of the keying slots, wherein at least two of the slots having different widths.

Ebner, however, teaches a FMA having two magnet poles, wherein the two poles are separate by two keying slots therebetween, wherein the two slots having different widths. Ebner teaches that the different widths of the two keying slots for the purpose of reducing the detent torque thereof.

Thus, Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the stator assembly by configuring the assembly to the two poles are separate by two keying slots therebetween, wherein the two slots having different widths, as taught by Ebner. Doing so would enable to reduce the detent torque thereof.

Allowable Subject Matter

Claims 7, 16, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

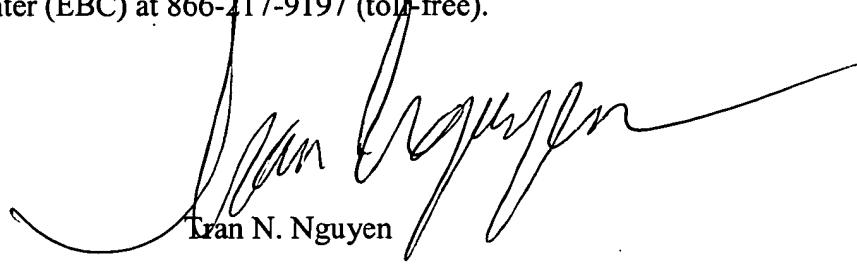
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran N. Nguyen whose telephone number is (571) 272-2030. The examiner can normally be reached on M-F 7:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571)-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2834

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tran N. Nguyen

Primary Examiner

Art Unit 2834